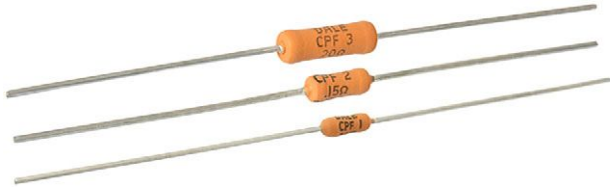


# Metal Film Resistors, Axial, Industrial Power, Precision, Flameproof



## FEATURES

- High power rating, small size
- Flameproof, high temperature silicone coating
- Special filming and coating processes
- Excellent high frequency characteristics
- Low noise
- Low voltage coefficient
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



### Note

\* This datasheet provides information about parts that are RoHS-compliant and /or parts that are non RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information / tables in this datasheet for details

| STANDARD ELECTRICAL SPECIFICATIONS |                  |   |   |                              |                         |  |
|------------------------------------|------------------|---|---|------------------------------|-------------------------|--|
| GLOBAL MODEL                       | HISTORICAL MODEL | MAXIMUM WORKING VOLTAGE <sup>(1)</sup><br>V | POWER RATING<br>$P_{70\text{ }^{\circ}\text{C}}$<br>W | RESISTANCE RANGE<br>$\Omega$ | TOLERANCE<br>$\pm \%$   | TEMPERATURE COEFFICIENT<br>$\pm \text{ppm}/^{\circ}\text{C}$ |
| CPF1                               | CPF-1            | 250   | 1   | 5 to 150K                    | 0.1, 0.25, 0.5, 1       | 25   |
|                                    |                  |   |   | 5 to 150K                    | 0.1, 0.25, 0.5, 1, 2, 5 | 50   |
|                                    |                  |   |   | 1 to 150K                    | 0.5, 1, 2, 5            | 100  |
|                                    |                  |   |   | 0.5 to 150K                  | 1, 2, 5                 | 150  |
|                                    |                  |   |   | 0.5 to 150K                  | 1                       | 200  |
|                                    |                  |   |   | 0.2 to 150K                  | 2, 5                    | 200  |
|                                    |                  |   |   | 0.1 to 150K                  | 2, 5                    | 300  |
| CPF2                               | CPF-2            | 350   | 2   | 5 to 150K                    | 0.1, 0.25, 0.5, 1       | 25   |
|                                    |                  |   |   | 5 to 150K                    | 0.1, 0.25, 0.5, 1, 2, 5 | 50   |
|                                    |                  |   |   | 1 to 150K                    | 0.5, 1, 2, 5            | 100  |
|                                    |                  |   |   | 0.5 to 150K                  | 1, 2, 5                 | 150  |
|                                    |                  |   |   | 0.5 to 150K                  | 1                       | 200  |
|                                    |                  |   |   | 0.2 to 150K                  | 2, 5                    | 200  |
|                                    |                  |   |   | 0.1 to 150K                  | 2, 5                    | 300  |
| CPF3                               | CPF-3            | 500   | 3   | 8 to 150K                    | 0.1, 0.25, 0.5, 1       | 25   |
|                                    |                  |   |   | 8 to 150K                    | 0.1, 0.25, 0.5, 1, 2, 5 | 50   |
|                                    |                  |   |   | 1 to 150K                    | 0.5, 1, 2, 5            | 100  |
|                                    |                  |   |   | 1 to 150K                    | 1, 2, 5                 | 150  |
|                                    |                  |   |   | 1 to 150K                    | 1                       | 200  |
|                                    |                  |   |   | 0.2 to 150K                  | 2, 5                    | 200  |
|                                    |                  |   |   | 0.1 to 150K                  | 2, 5                    | 300  |

### Note

<sup>(1)</sup> Continuous working voltage shall be  $\sqrt{P \times R}$  or maximum working voltage, whichever is less

**GLOBAL PART NUMBER INFORMATION**

New Global Part Numbering: CPF1562R00FKR36 (preferred part numbering format)

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|--|--|
| C | P | F | 1 | 5 | 6 | 2 | R | 0 | 0 | F | K | R | 3 | 6 |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|--|--|

| GLOBAL MODEL         | RESISTANCE VALUE  | TOLERANCE CODE  | TEMPERATURE COEFFICIENT  | PACKAGING  | SPECIAL   |
|----------------------|---|---|--|--|---|
| CPF1<br>CPF2<br>CPF3 | R = Ω<br>K = kΩ<br>R10000 = 0.1 Ω<br>10R000 = 10 Ω<br>150K00 = 150 kΩ | B = ± 0.1 %<br>C = ± 0.25 %<br>D = ± 0.5 %<br>F = ± 1 %<br>G = ± 2 %<br>J = ± 5 % | E = 25 ppm<br>H = 50 ppm<br>K = 100 ppm<br>L = 150 ppm<br>N = 200 ppm<br>M = 300 ppm | E14 = lead (Pb)-free, bulk<br>E36 = lead (Pb)-free, T/R (full)<br>EE6 = lead (Pb)-free, T/R (1000 pcs)<br><br>B14 = tin / lead, bulk<br>R36 = tin / lead, T/R (full)<br>RE6 = tin / lead, T/R (1000 pcs) | Blank = standard (dash number) (up to 3 digits) From 1 to 999 as applicable |

Historical Part Number Example: CPF-15620FT-1 R36 (will continue to be accepted)

|                  |                  |                |                   |           |
|------------------|------------------|----------------|-------------------|-----------|
| CPF-1            | 5620             | F              | T-1               | R36       |
| HISTORICAL MODEL | RESISTANCE VALUE | TOLERANCE CODE | TEMP. COEFFICIENT | PACKAGING |

**Note**

- For additional information on packaging, refer to the Through-Hole Resistor Packaging document ([www.vishay.com/doc?31544](http://www.vishay.com/doc?31544))

**TEMPERATURE COEFFICIENT CODES**

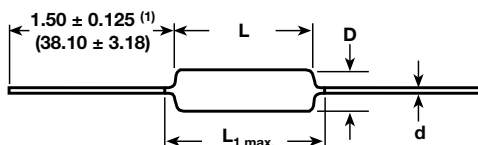
| GLOBAL TC CODE | HISTORICAL TC CODE | TEMPERATURE COEFFICIENT |
|----------------|--------------------|-------------------------|
| E              | T-9                | 25 ppm/°C               |
| H              | T-2                | 50 ppm/°C               |
| K              | T-1                | 100 ppm/°C              |
| L              | T-0                | 150 ppm/°C              |
| N              | T-00               | 200 ppm/°C              |
| M              | M                  | 300 ppm/°C              |

**TECHNICAL SPECIFICATIONS**

| PARAMETER                               | UNIT             | CPF1             | CPF2 | CPF3 |
|---|------------------|------------------|------|------|
| Rated Dissipation at 70 °C              | W                | 1                | 2    | 3    |
| Limiting Element Voltage <sup>(1)</sup> | V <sub>≅</sub>   | 250              | 350  | 500  |
| Insulation Voltage                      | V <sub>eff</sub> | 900              | 900  | 900  |
| Thermal Resistance                      | K/W              | 85               | 60   | 50   |
| Insulation Resistance                   | Ω                | 10 <sup>10</sup> |      |      |
| Category Temperature Range              | °C               | -65 °C / +230 °C |      |      |

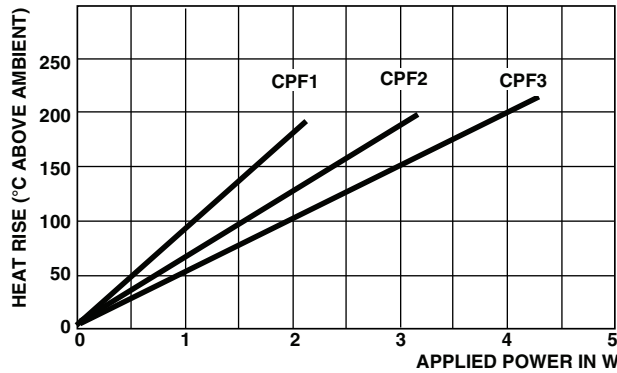
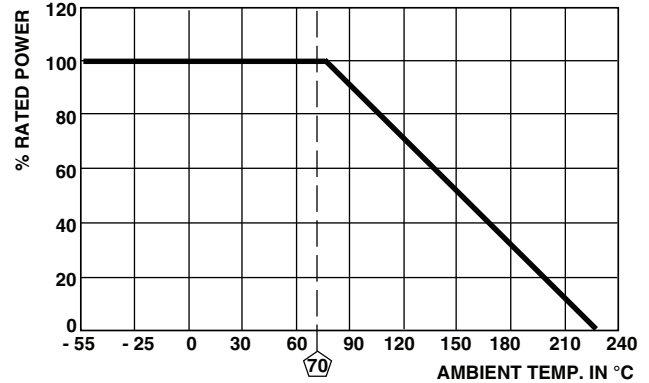
**Note**

- <sup>(1)</sup> Rated voltage  $\sqrt{P \times R}$

**DIMENSIONS**

**Note**

- <sup>(1)</sup> Lead length for product in bulk pack. For product supplied in tape and reel, the actual lead length would be based on the body size, tape spacing and lead trim

| GLOBAL MODEL | DIMENSIONS in inches (millimeters) |                                 |                     |                                |
|--------------|------------------------------------|---------------------------------|---------------------|--------------------------------|
|              | L                                  | D                               | L <sub>1 max.</sub> | d                              |
| CPF1         | 0.240 ± 0.020<br>(6.10 ± 0.51)     | 0.090 ± 0.008<br>(2.29 ± 0.20)  | 0.310<br>(7.87)     | 0.025 ± 0.002<br>(0.64 ± 0.05) |
| CPF2         | 0.344 ± 0.031<br>(8.74 ± 0.79)     | 0.145 ± 0.015<br>(3.68 ± 0.38)  | 0.425<br>(10.80)    | 0.032 ± 0.002<br>(0.81 ± 0.05) |
| CPF3         | 0.555 ± 0.041<br>(14.10 ± 1.04)    | 0.180 ± 0.015<br>(4.57 ± 0.381) | 0.650<br>(16.51)    | 0.032 ± 0.002<br>(0.81 ± 0.05) |

**THERMAL RESISTANCE**

**DERATING**

**Note**

- Surface temperatures were taken with an infrared pyrometer in +25 °C still air. Resistors were supported by their leads in test clips at a point 0.500" (12.70 mm) out from the resistor body ends

| MATERIAL SPECIFICATIONS |   |
|-------------------------|---|
| Element                 | Proprietary nickel-chrome alloy   |
| Core                    | Cleaned high purity ceramic   |
| Coating                 | Special high temperature conformal coat   |
| Termination             | Standard lead material is solder-coated<br>Solderable and weldable per MIL-STD-1276, type C |

| MECHANICAL SPECIFICATIONS |   |
|---------------------------|---|
| Terminal Strength         | 2 pound pull test   |
| Solderability             | Continuous satisfactory coverage when tested in accordance with MIL-STD-202, method 208 |

| MARKING   |                     |
|---|---------------------|
| Temperature Coefficient: T00 = 200 ppm, T0 = 150 ppm, T1 = 100 ppm, T2 = 50 ppm, T9 = 25 ppm, M = 300 ppm |                     |
| CPF1, CPF2, CPF3: (5 lines)   |                     |
| DALE  | Manufacturer's name |
| CPF-1   | Style and size      |
| 49.9 kΩ   | Value               |
| 1 % T2  | Tolerance and TC    |
| 1208  | 4-digit date code   |

| PERFORMANCE                     |                             |
|---------------------------------|-----------------------------|
| TEST                            | MAX. ΔR (TYPICAL TEST LOTS) |
| Thermal Shock                   | ± 1.0 %                     |
| Short Time Overload             | ± 0.5 %                     |
| Low Temperature Operation       | ± 0.5 %                     |
| Moisture Resistance             | ± 1.5 %                     |
| Resistance to Soldering Heat    | ± 0.5 %                     |
| Shock                           | ± 0.5 %                     |
| Vibration                       | ± 0.5 %                     |
| Terminal Strength               | ± 0.5 %                     |
| Dielectric Withstanding Voltage | ± 0.5 %                     |
| Life                            | ± 2.0 %                     |



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